returning to the hospital for future operative work, and certainly must lessen the danger of malignant disease at a later period in life.

4. The approximation and healing is perfect and the scar tissue so trivial that it does not interfere in any way with subsequent dilatation of the cervix at future pregnancies.

5. A general anesthetic is not needed; therefore, the patient is saved this risk.

6. This operation does not interfere with the patient being up and around, nor with her going home at the end of the fourteenth day following confinement.

Result Six Weeks Following Operation—The results are most gratifying, the cervix normal in size and color, no cervical discharge, perfect union by primary intention, and a pinhole os that looks in many cases, as if it were a nulliparous os, and it would be hard in some to tell a woman had ever borne a child.

CONCLUSIONS

1. The end results speak for themselves.

2. The operation is easy and can be done either at home or in the hospital.

3. No general anesthetic is needed except in selected cases.

4. The patient does not have to return to the hospital for future operative work.

5. Involution of the uterus is hastened.

6. Dangers of septic endometritis is lessened, together with lessened danger of Ectopic pregnancy, on account of chronically inflamed tubes, due to chronic metritis and endometritis.

Lastly, a perfectly healed cervix with lessened danger of malignant development in later life.

Two Violators Concerned in Criminal Abortions—The following editorial in the Sacramento Bee of December 14 will prove interesting to physicians as well as the public in general: "The district attorney of Sacramento County is charged with being remiss in his duty in that his office failed to co-operate with the board of medical examiners in the case of certain individuals charged with performing illegal operations. Whatever may be the merit of this complaint, the accusation brings up again the fact of the startling prevalence of a horrible crime—one in which women by the hundreds are criminal participants; women who would be deeply indignant if anybody imagined they possibly could connive at the death even of a dog. Before God and in the eyes of the law, women who hire others to kill their unborn babes are as guilty as those who commit the hellish deed. And it is a travesty upon justice to put one in jail and never to punish the other."

New Medico-Dental Building for San Francisco—A Medico-Dental office building in San Francisco, owned by physicians and dentists, seems assured. It will be erected on the northeast corner of Post and Mason streets. Plans for the building are about complete. It will be approximately fifteen stories in height, will have a library, as well as assembly and committee rooms, and will cost over one million dollars.

Since the announcement of the plan to erect the Medico-Dental building, the directors of the corporation have been gratified to receive widespread expressions of the professional men of this city in the project.

RESULTS OF RADIUM IN GYNECOLOGY *

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Since the advent of radioactivity into the field of therapeutics, a tremendous amount of literature has accumulated on the subject. In the beginning, just as with most innovations, it was accepted almost universally by the medical profession as a panacea for the cure of neoplastic diseases. This impression, unfortunately, has been strengthened in the minds of the laymen by the publicity gained through magazine and newspaper articles. The inevitable adjustment is at hand, however, and the pendulum is now swinging towards a more conservative and sane evaluation. From the chaotic mass of individual case reports, the field of application of radioactivity is being definitely outlined and clearly defined. We offer the results obtained by radium in the Department of Gynecology at the University of California, with the hope that our contribution may aid in this process of crystallization and serve to place the subject on a more rational basis.

The material for the study consists of 162 cases which have applied to and which have been treated by our Woman's Clinic during the years 1916 to 1921, inclusive. The malignant cases comprise carcinoma of the cervix, uterine body, ovary, clitoris, and urethra. The non-malignant cases include fibromyoma and myomatous polyps and endocervicitis. We also used radium for the control of hemorrhages occurring in the adolescent and premenopausal period not occasioned by tumor growth. Once it was employed to induce the menopause in a woman who developed a psychosis with the onset of each menstrual period. A single case of chorioepithelioma was treated with interesting and instructive results. In addition to this series, we have employed radium in a few instances for the treatment of malignant conditions of the rectum and groin. The results in this group of cases have not been included in our review, since we are concerned in this study only with a purely gynecologic discussion.

Carcinoma of the Cervix—The relative frequency of cancer of the cervix and that of the uterine body is usually stated to be as 20 is to 1. This ratio is not confirmed by our study for, during five years, 108 women with cervical carcinoma and ten with fundal growths applied for treatment. The ages of these cases ranged from twenty-eight to seventy years. Emphasis is usually laid upon the tendency of the cervical carcinoma to develop in women near the menopause, yet it must not be overlooked that the growth may make its appearance at a much earlier period. While the majority of our women were in the fourth or fifth decade, four women under thirty (3.7 per cent of the total) were suffering from advanced growths when first seen. In this connection, Wertheim, in reviewing his first series of five hundred cases, found that 6 per cent of the cancers

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of the cervix occurred in women under thirty years. Twenty-seven per cent (twenty-nine cases) of our women were nullipara, an interesting observation in view of the importance attached usually to the trauma of child birth and to chronic endocervicitis as etiological factors of uterine carcinoma.

It is impossible in a review of this kind to give all the details of the treatment. Briefly stated, our plan has been to use the radium as a salt or emanation in a glass capsule screened by 1 mm. of brass and 1 mm. of silver. The capsule, encased in sterile black rubber tubes, has been inserted into the cervical canal and uterine body to permit as wide an area for raying as is possible. Instrumental dilatation of the cervical canal has usually been avoided for fear of distributing the cancer cells. Additional cross-fire has been obtained by capsules placed in the lower uterine cavity and in the vagina in direct contact with the cervix and parametrium. We have tried bare tubes with small doses and have found them of little use save in vaginal metastasis. Many of our women presented with large sloughing ulcers which we formerly treated by actual cauterization; recently, however, we have abandoned this procedure, realizing that the exuberance of the growth could be utilized as a screen and thus permit of more extensive treatment. Gauze strips and rubber dam have been firmly packed into the vagina, to separate its walls and to protect the rectum and bladder which are emptied by enema and frequent catheterization.

The average doses have ranged from 3000 to 5000 mc. hours given either in a single treatment or, more frequently, by the fractional method, by which a relatively large dose (2000 mc. hours) has been given at the first application and has been repeated after an interval of forty-eight to seventy-two hours. Although comparatively large amounts of the emanations are available, we have usually employed a capsule containing 100 to 150 mc. Additional treatment was occasionally given three to four months later if the symptoms returned and the visible growth had not been checked.

While we are aware of the variations in the histology and the morphology of cervical carcinoma, it has not often been possible to utilize these classifications to group our cases. The vast majority of our patients when first seen presented a stage in which the growth had lost its distinguishing characteristics. Usually, there was only a sloughing ulcer. Moreover, the fact that tumors presenting identical histologic and morphologic features may vary considerably in their clinical manifestations, rate of growth and degree of malignancy adds inevitably to the difficulty of drawing conclusions as to the response of the neoplasm to treatment.

We have divided our material into early or operable cases, borderline and inoperable growths. This division has been based upon: (1) the duration of symptoms; (2) the fixation of the growth and infiltration of the pelvic connective tissues; (3) the presence of metastatic deposits; (4) constitutional reaction. The first factor is dependent largely upon the intelligence and observation of the woman; the second is influenced by the presence of an infected ulcer with its attendant inflammatory reaction and thickening and fixation of the parametrium. This classification, however, has served as a suitable working basis.

There were 108 women with cervical carcinoma, twenty-three of whom had recurrent growths after some type of hysterectomy or cervical amputation; eighty-five had primary cervical growth. Eighty-two of this latter group received only radium treatment. Three were subsequently operated.

Inoperable Growths (Forty-two Cases)—Over half (51 per cent) of these patients had inoperable growths; many were almost moribund from profuse hemorrhage and cachexia; all showed massive pelvic involvement. We refused no patient in our earlier series, although we appreciated the fact that radium was useless and possibly harmful in some instances. More recently we have refused to treat the moribund cases or the very extensive cases complicated by vaginal fistulae. The fate of two of the forty-two women with advanced growths could not be determined. Thirty women (71 per cent) are dead, the majority (66 per cent) having succumbed within a few months to a year after radiation. Yet four of them lived over a period of two to three years with marked improvement of their general condition, control of the pain, and checking of hemorrhage. One of these cases merits further discussion. This woman of forty-two had a large inoperable fungating cervical mass, which was so altered by radiotherapy that the condition was considered operable. Two months after her last treatment, an attempt was made to remove the growth, but at operation it was found that the involvement was so extensive that a radical removal was impossible. The operation consisted of a simple panhysterectomy; yet this patient is entirely free from evidence of carcinoma nearly four years after operation. This possible cure must be attributed to the radium; she received intensive post-operative raying also. Two women had survived at the time of our report, although none appeared as if they would become five-year cures. Three have been followed over three years. While this group is small, we must admit that radium has had a remarkable palliative effect when 10 per cent of the cases in the terminal stage of the disease have survived over a period of three years and living has been made bearable and comfortable. We wish to lay emphasis on the point that radium helps this class of case, chiefly by cleaning up the ulcer.

Borderline Cases—In the borderline group were thirty-one patients (38 per cent of the series) who gave symptoms of six months to a year's duration. Ulceration of the cervix was present in all. Our records on twenty-four of these women show that over 50 per cent (thirty-one) were alive, some as long as two years after treatment. Three women were so improved as the result of raying that they were subsequently operated.

It is with this type of case that radium has been definitely more satisfactory than has surgery.

While surgery rarely cures more than 10 per cent to 15 per cent of the borderline cases, Bumm has reported a 21 per cent five-year cure by radium in a series of twenty-two cases. We realize the necessity of estimating a cure by radium on a basis identical with that set up by surgical standards; namely, a five-year period of freedom from recurrence. Therefore, we draw no conclusions from our series, but feel that our results from radiotherapy with this type of case have been encouraging.

Operable Cases.—There were only two patients with very early cases of cervical carcinoma in whom surgery was definitely contra-indicated because of cardiac complications. One woman died with an embolus one year following treatment, without gross evidence of cancer. There was no autopsy, so we do not know the actual condition. The other patient shows no evidence of carcinoma after three years. We attempt no conclusions from these cases, and believe that at present operable cases should be treated by radical surgery since the work of Bumm shows that, judged on the basis of five-year cures, surgery in early growths gives better results than radium.

Recurrent Carcinoma—Recurrent growths have responded less satisfactorily than any other group, possibly because the great majority of these are not recurrences but represent the proliferation of cancerous tissues not removed at time of operation. Fifteen cases (65 per cent) of these twenty-three patients have died, usually within a year following the treatment. One of the five women who are living is clinically well after three and a half years, a result which may be due to a variation in the malignancy of the neoplasm. Three women have been lost from our records.

Radiation After Operation — Radium has been used prophylactically following radical hysterectomy as popularized by Wertheim. Two of the five women so treated are well after five and six years' observation, respectively. The time interval is too short with the remainder to draw any conclusions. Nor do we claim that radium plus operation was the decisive combination in these two cases. The removal was most extensive in each case.

Carcinoma of the Uterine Body—We coincide with the opinion that these growths are best treated by surgery. and operate all cases. We have had ten cases with fundal carcinoma. Five are dead (all advanced recurrent growths). Five are living, three as long as four years. All had been operated before radiation. Twice, while doing a panhysterectomy for fundal carcinoma, the uterus was so friable from cancerous invasion that, despite the utmost gentleness, the wall was torn through, with liberation of the neoplasm. Both women received large doses of radium post-operatively and have been followed for four years. One has recurrences.

Carcinoma of the Ovary—We have treated carcinoma of the ovary in six cases, one of the urethra and two of the clitoris, without good results and without apparent control of the cancer. The results of operation, however, are also extremely poor.

Menorrhagia and Metrorrhagia — The hemorrhages associated with adolescence, or the fibrosis uteri of the menopause, can be effectively controlled by radium. By grading the doses according to the age of the patient, we have found that the amount of blood lost at a period can be regulated practically at will. Of the fifteen women treated, fourteen were definitely relieved. One came subsequently to operation because of abdominal pain.

Myomata and Fibroid Polyps—Seven women were subjected to radiotherapy for bleeding from fibroids after malignancy was excluded by curettage. One patient with a fibroid reaching to the umbilicus developed a pelvic peritonitis following radiation. One with a submucous polyp continued to bleed and was subsequently operated. The others were helped. We now restrict the treatment to growths confined to the pelvis in women near the menopause, and in whom submucous polypoid tumors, malignancy or inflammatory pelvic reaction can be excluded.

Endocervicitis—The leucorrhea from endocervicitis was improved in all cases (four) which were selected for this type of treatment. The radium was applied intracervically. The question as to whether this treatment causes sterility is as yet unanswered.

Chorioepithelioma—We have treated one case by radium. A woman of fifty-three, para XV, in whom a choriocarcinoma developed fifteen years after a final pregnancy received 3420 mc. hours of radium in one application in the uterine canal. It did not arrest the growth or control symptoms and, two months later, a hysterectomy was done because of the recurrence of the uterine hemorrhage. The case is of interest in that radium is so often urged for this type of case on the ground that it readily kills embryonic cells. It had little or no effect in this case.

SUMMARY

From our review, we feel warranted in concluding that radiotherapy has a definite place in gynecologic therapeutics. We do not believe that it cures inoperable growths, but feel that it aids the patient by cleaning up the ulcer and arresting hemorrhage. This it does in the majority of cases. Death is usually postponed and a large proportion of the cases are temporarily relieved of pain. Even more can be expected in borderline cases. Operable cases should be treated surgically after preliminary radiation. We agree that cancer of the uterine body is best treated by surgery. The bleeding of myomata in properly selected cases, the various metropathies and some of the leucorrheal discharges can be satisfactorily controlled by raying.

DISCUSSION

Roland Skeel, Los Angeles—I have had a little experience with radium but not enough to warrant discussion. The thing that struck me most forcibly in the paper was the fact that twenty-seven per cent of the cases of cervical cancer were nulliparous. I have never seen carcinoma of the cervix in the nullipara.

Wm. Henry Gilbert, Los Angeles—Dr. Skeel said that he has never seen caricinoma of the cervix in the nullipara, I have! It was a fatal case and one on which a Wertheim operation was fol-

lowed by a recurrence treated afterwards with radium without good results. I want to compliment Dr. Maxwell on her paper because I consider it of very great importance. Personally, I have gotten to the point where I don't operate on cancer of the cervix anymore. I refer them all to my radiological friends and I believe that radium, compared to the experience that I have had, with surgery and the use of Dr. Percy's Cautery, is to be preferred. When it comes to cancer of the fundus, I believe that surgery is the method of preference followed afterwards by either radium or deep penetration from the high potency machine. I think that radiation is still in its infancy and we may expect much from it which will open great avenues of hope for these patients.

Frank R. Girard, San Francisco—This is indeed a question that is still in its infancy and I think it will be many years before it is thoroughly decided. Some men are taking the stand now that carcinoma of the cervix and uterus is never a surgical disease but should always be treated by X-ray or radium. I can not bring myself to take this radical stand. There is always the advanced case, as Dr. Maxwell brought out in the paper, which we are powerless to treat by surgery and which can be made comfortable for the remainder of life by radiation. Carcinoma of the body of the uterus is undoubtedly primarily a surgical disease to be followed by radium later. I think the very early cases of cervical cancer which we occasionally see and which I hope we may see oftener, as people become educated to the importance of consulting their physician on the appearance of early symptoms, will be followed by a larger proportion of cures if the radical operation is combined with radiation. I would feel safer treating these cases by surgical methods plus radiation rather than by radiation alone.

James Percy, San Diego—There are so many sides to this question that I have been lying dormant in reference to the cautery. I have been watching my cases and I am interested in the statement that was made in the paper about cauterization having been abandoned. The cautery has never been mentioned in the literature more frequently than at the present time. You can't down the cautery in cancer. It is the only thing that survived with the human race and is still the most certain treatment for cancer that we have. The only thing is that we think of the cautery as a red-hot, white-heat instrument of torture. That day will soon be gone. There is nothing that the cancer cell succumbs to so quickly as heat. Just 113° F. for ten minutes and you cannot transplant any cancer cells. Now it is a mere question of dissemination. It is curious to me that gynecologists have forgotten the work of John Byrne who deplored the use of the knife.

Jones, Long Beach—With regard to the surgery, Dr. Crile says, "Handle the tissues lovingly," and I am very much afraid at times that we do not get results from surgery sometimes because we do not handle the tissues lovingly enough. Personally, I have used, in the last six or seven years, radium following surgery in quite a number of the so-called non-operable cases. I do believe that if we will be more careful in handling our carcinomatous tissue we will not have as many recurrences.

Margaret Schulze, San Francisco—We believe that our results have been a good deal better with the radium than with the cautery. The comparatively good results in the borderline type of case tends to make us consider operating upon a patient very much more seriously than we might have at an earlier time when we did not have the radium. The borderline case does a great deal better with radium than with operation and so we want to make sure that it is not a very early operable case before we subject the patient to radium. Inoperable cases are much better treated by radium alone.

THE TECHNIQUE AND ORGANIZATION OF THE LOS ANGELES MATERNITY SERVICE*

A MUNICIPAL MATERNITY DISPENSARY

By LYLE G. McNEILE, M. D., Los Angeles

The Maternity Service was organized in 1915 by the Los Angeles City Health Department. The staff consists of the author as supervising obstetrician, assisted by five assistant supervising obstetricians, six resident physicians (or internes), and from two to four medical students. who are called externes.

The assistant supervising obstetricians are appointed from the eligible list of junior attending obstetricians to the Los Angeles County Hospital. They act as consultants to the resident physicians, and supervise all treatment, surgical or otherwise, in pathological cases. The resident physicians must be licentiates in medicine, and must have completed an interneship of not less than twelve months in an approved general hospital. They are appointed for a term of six months, and receive $75 per month, with mileage allowance for the use of their automobiles, and room with bed and laundry.

Externes are third or fourth-year medical students who have completed a course in normal obstetrics in an approved medical school, and are appointed for a two weeks' student service.

A central office is maintained at 118 Normal Hill Center, for the purpose of handling all routine clerical work, records, labor bags, obstetrical supplies and many other matters which are routine in a large dispensary. The office is in actual charge of a clerk-stenographer. Cases are reported to the office on a postcard form, or by telephone in case of emergency. The majority of such reports come from district nurses, charitable organizations, clinics, hospitals and other similar agencies. A relatively large number of calls come from new patients who have heard of the service from "old patients."

Upon receipt of a call, the clerk makes out a blank ante-partum record, which is given to the externe (student), on duty. The externe sees the patient within a few hours, recording the medical and obstetrical history, with the result of his obstetrical examination. The patient is given a copy of a leaflet, "Advice to those who are about to become mothers," which is printed in several languages. She is also given a dispensary card, giving the location of the nearest dispensary, and directions for calling the Maternity Service at the time of labor. She is instructed to come to the Maternity Dispensary at least every two weeks throughout pregnancy, and to bring with her at each visit a specimen of urine for examination. If the patient cannot, or will not go to the dispensary, a resident physician sees her at her home at least every two weeks during pregnancy.

All of the externes' work is checked up by the resident physician in whose district the patient lives. The physician, and not the externe, is held responsible for each case, and is compelled to see the case as often as necessary.

* Read before the Section of Obstetrics and Gynecology of the Medical Society of the State of California at Yosemite National Park, May 16, 1922.